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APPLICATION FOR UNITED STATES LETTERS PATENTS

FOR

TIME SLOT BASED CALENDAR ~~WITH USER TYPES AND~~

~~ASSOCIATED~~ ACCESS PRIVILEGES

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"Express Mail" label number _____

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BACKGROUND OF THE INVENTION

1.   Field of the Invention

The present invention relates to computer hosted calendars, more

particularly the present invention relates to computer hosted calendars having

5   a plurality of distinct read and write authorizations at time slot granularity of a

calendar.

2.   Background Information

Computer hosted calendaring systems in general are well known in the

10   art. These prior art systems provide to an individual user a computer

maintained record of the individual user's event schedule, and data

associated with each event in the schedule, arranged for viewing in a

temporal presentation. Each event usually has three components, a starting

time, an ending time, and a description, with the starting time and the ending

15   time together defining an event time-slot. The temporal presentation is

generally arranged according to a calendar. The calendar is generally

arranged according to several selectable views that include a yearly view, a

monthly view, a weekly view, a two-day view, and a daily view.

Computer hosted calendaring systems are generally maintained and/or

20   stored either in a stand-alone computer system, or in a networked computer

system. In a networked computer system, the calendaring system can also

be networked. A networked calendaring system permits a calendar owner's

calendar, whose event schedule is maintained and/or stored by one computer

system, to be accessed on another computer system functionally connected

25   to the computer system that maintains and/or stores the calendar owner's

calendar. In these networked calendaring systems, a calendar owner's system is generally maintained and stored on a server system, with the calendar owner, and other potential user's of the calendar, functioning as clients in relation to the server. Alternatively, the calendar owner's calendar

5   may be maintained and stored in the calendar owner's computer, with other users functionally connected to the calendar owner's calendar through a server, or alternatively interfacing directly to the calendar owner's calendar in a local network having local protocols.

A computer hosted calendaring system is conventionally accessible by

10   authorized users other than the calendar owner, who can read and/or write event data from and to the calendar owner's schedule. However, these ~~prior art~~ calendaring systems provide to these authorized users an authorization for only the entire calendar owner's calendar (except for conventionally designated private events), rather than for uniquely defined time-slots for a

15   read and/or a write operation. Moreover, these prior art systems do not provide for a plurality of user groups, each user group defined by a set of distinct authorized time-slots for a read and/or a write operation.

SUMMARY OF THE INVENTION

20   A method of calendaring events in a computing system, and an article containing instructions for operating a calendar in a computing system are disclosed. A calendar owner may~~can~~ define a plurality of groups and/or user types ~~and user identifications~~ for his or her calendar to the computing system. For each group affiliation, user type or user identification, the calendar owner

25   designates the time-slots in his or her calendar to which the user, or a user

affiliated with a group or having a user type or identification has both may have a time slot based read access, and/or a time slot based write access, to his or her calendar. The time slot based read access and the time slot based write access time-slots maycan be separately defined. The calendar owner can also assign individual parties to the designated access of another user type or identification.

A party trying to gain read and/or write access to the calendar owner's calendar attempts to access the calendar through the computer. If the party has been designated by the calendar owner to have access to at least some of time slots of the calendar owner's calendar, he or she is accorded the time-slots that the calendar owner has designated.

In one embodiment of the present invention, the computer system designates to each possible second party user a time slot based read and/or a write access privilege, each including an ability to read or write data from at least one particular predetermined calendar a subset of time-slots, but not all the time slots. The computer reads an identification of a party conforming to one of the possible users, and the user is granted accesses to data of selected calendar time slots data according to the user's designated time slot based calendar access privilege.

In another embodiment of the present invention, one or more computer-readable media have stored a plurality of programming instructions for execution by at least one computer, that when executed perform the operation of designating to a user of the calendar a specific time slot based access ability ability, explicitly granted, or implicitly granted based on a

characteristic of the user, and processing a request to access selected time
slots of the calendar based on the designated time slot based access ability.

BRIEF DESCRIPTION OF THE DRAWINGS

5   The present invention will be described by way of exemplary
embodiments, but not limitations, illustrated in the accompanying drawings.
Identical numerals indicate the same elements throughout the figures.

   Figure 1 is an exemplary Owner Authorization menu presented to a
calendar user on a computer system display, according to one embodiment.
10 A calendar owner uses an Owner Authorization menu to grant to a second
party read and/or write access to the owner's calendar, as well as to
designate the time-periods for the respective second party read and/or write
access.

   Figure 2 is an exemplary Guest Identification menu for associating a
15 user group with a user identification according to one embodiment.

   Figure 3 is the exemplary Owner Authorization menu of Figure 1 in
which both read and write access data has been entered for a second party
user, as well as the time-periods for that access.

   Figure 4 is an exemplary conventional monthly calendar with entries,
20 presented on a computer system display or alternatively printed.

   Figure 5 is an exemplary conventional two-day calendar for the days
Thursday June 8, and Friday June 9, presented on a computer system
display or alternatively printed.

Figure **6** is an exemplary monthly calendar extracted from the calendar owner's monthly calendar portrayed in Figure **4**, for a second party user having an exemplary restricted read access portrayed as the time-periods entered in the Owner Authorization menu portrayed in Figure **3**, presented on

5 a computer system display or alternatively printed, according to one embodiment.

Figure **7** is an exemplary conventional two-day calendar with entries that are consistent with the entries portrayed in Figure **4** for an exemplary date June 12, presented on a computer system display or alternatively

10 printed.

Figure **8** is an exemplary conventional two-day calendar with entries that are consistent with the entries portrayed in Figure **4** for an exemplary date June 13, presented on a computer system display or alternatively printed.

15 Figure **9** is an exemplary conventional two-day calendar with entries that are consistent with the entries portrayed in Figure **4** for an exemplary date June 15, presented on a computer system display or alternatively printed.

Figure **10** is an exemplary two-day calendar from a calendar owner's

20 two-day calendar for June 12 portrayed in Figure **7** according to one embodiment, for a second party user having a restricted read access portrayed as the time-periods entered in the Owner Authorization menu portrayed in Figure **3**, presented on a computer system display or alternatively printed.

Figure **11** is an exemplary two-day calendar from a calendar owner's two-day calendar for June 13 portrayed in Figure **7** according to one embodiment, for a second party user having a restricted read access portrayed as the time-periods entered in the Owner Authorization menu

5   portrayed in Figure **3**, presented on a computer system display or alternatively printed.

Figure **12** is an exemplary two-day calendar from a calendar owner's two-day calendar for June 15 portrayed in Figure **8** according to one embodiment, for a second party user having a restricted read access

10   portrayed as the time-periods entered in the owner authorization menu portrayed in Figure **3**, presented on a computer system display or alternatively printed.

Figure **13** is an exemplary Guest menu for a second party to access a calendar owner's calendar, to read from and/or write to the calendar owner's

15   calendar, according to one embodiment.

Figure **14** is an exemplary Second Party Write menu for a second party to write into a calendar owner's calendar, according to one embodiment.

Figure **15** is a flowchart portraying a method according to one embodiment, of maintaining a second party read access status, and a second

20   party write access status.

Figure **16** is a flow chart for associating a user identification or access type with a calendar access ability, and designating to a calendar user that access ability, according to one embodiment.

Figure **17** is a flowchart for reading and writing data from a time-slot of a computer maintained calendar of this invention, according to one embodiment.

Figure **18** is a flowchart for receiving from a second party having a user

5   type or group affiliation, a request for a first party's calendar for a time-period, and processing the request according to the user type or group affiliation, according to one embodiment.

Figure **19** is a flowchart for receiving input for a calendar owner's calendar by a second party user, and processing the input according to the

10   second party's type or affiliation, according to one embodiment.

Figure **20** is an exemplary computer system that is related to the use of the present invention, according to an embodiment.

DETAILED DESCRIPTION OF THE INVENTION

15   In the following description, various aspects of the present invention will be described. However, it will be apparent to those skilled in the art that the present invention may be practiced with only some or all aspects of the present invention. For purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding

20   of the present invention. However, it will also be apparent to one skilled in the art that the present invention may be practiced without the specific details. In other instances, well known features are omitted or simplified in order not to obscure the present invention. ~~In particular, the present invention is presented with reference to a plurality of displays and data input menus.~~

These displays and data input menus are exemplary and illustrative of an
embodiment of the present invention, and how the present invention can be
used. It is understood that the displays and menus required by the present
invention and presented herein for exemplary purposes are adaptable to
5   conform to the data display and entry characteristics of other calendaring
systems.

Some portions of the detailed descriptions that follow are presented in
terms of algorithms and symbolic representations of operations on data bits
within a computer memory. These algorithmic descriptions and
10   representations are the means used by those skilled in the data processing
arts to most effectively convey the substance of their work to others skilled in
the art. An algorithm is here, and generally, conceived to be a self-consistent
sequence of steps leading to a desired result. The steps are those requiring
physical manipulations of physical quantities. Usually, though not
15   necessarily, these quantities take the form of electrical or magnetic signals
capable of being stored, transferred, combined, compared, and otherwise
manipulated. It has proven convenient at times, principally for reasons of
common usage, to refer to these signals as bits, values, elements, symbols,
characters, terms, numbers, or the like.

20   It should be borne in mind, however, that all of these and similar terms
are to be associated with the appropriate physical quantities and are merely
convenient labels applied to these quantities. Unless specifically stated
otherwise as is apparent from the following discussion, it is appreciated that
throughout the description, discussions utilizing terms such as "processing" or
25   "computing" or "calculating" or "determining" or "displaying" or the like, refer

to the action and processes of a computer system, or similar electronic

computing device, that manipulates and transforms data represented as

physical (electronic) quantities within the computer system's registers and

memories into other data similarly represented as physical quantities within

5   the computer system memories or registers or other such information storage,

transmission or display devices.

The present invention also relates to apparatus for performing the

operations herein. This apparatus may be specially constructed for the

required purposes, or it may include a general purpose computer selectively

10   activated or reconfigured by a computer program stored in the computer.

Such a computer program may be stored in a computer readable storage

medium, such as, but is not limited to, any type of disk including floppy disks,

optical disks, CD-ROMs, and magnetic-optical disks, read-only memories

(ROMs), random access memories (RAMs), EPROMs, EEPROMs, magnetic

15   or optical cards, or any type of media suitable for storing electronic

instructions, and each coupled to a computer system bus.

The algorithms and displays presented herein are not inherently

related to any particular computer or other apparatus. Various general

purpose systems may be used with programs in accordance with the

20   teachings herein, or it may prove convenient to construct more specialized

apparatus to perform the required method steps. The required structure for a

variety of these systems will appear from the description below. In addition,

the present invention is not described with reference to any particular

programming language. It will be appreciated that a variety of programming

languages may be used to implement the teachings of the invention as

described herein.

5
~~Parts of the description will be presented using terms such as scripts,
applet, end-user interfaces, icons, and so forth, commonly employed by those
skilled in the art to convey the substance of their work to others skilled in the
art. Parts of the description will be presented in terms of operations
performed by a computer system, using terms such as registering, notifying,
sending, and so forth. As well understood by those skilled in the art, these
quantities and operations take the form of electrical, magnetic, or optical~~

10
~~signals capable of being stored, transferred, combined, and otherwise
manipulated through mechanical and electrical components of a digital
system; and the term digital system include general purpose as well as
special purpose data processing machines, systems, and the like, that are
standalone, adjunct or embedded.~~

15
Various operations will be described as multiple discrete steps
performed in turn in a manner that is most helpful in understanding the
present invention, however, the order of description should not be construed
as to imply that these operations are necessarily order dependent, in
particular, the order the steps are presented. Furthermore, the phrase "in one

20
embodiment" will be used repeatedly, however the phrase does not
necessarily refer to the same embodiment, although it may.

Referring now to Figure 1, a calendar owner (or other party having
access authority for the calendar, hereinafter calendar owner) can preferably
call up an Owner Authorization menu 101 on a computer display to give use

25
access to a party, a group of parties, or a type of user to the owner's

calendar. The Owner Authorization menu **101** has a User data entry field **102**

for an alphanumeric selection of the party, group of parties, or type of user

(hereafter second party) being given an access status to the user's calendar.

The user preferably selects the User data entry field **102**, and subsequently

5   enters the second party's alphanumeric designation via a computer keyboard,

with the entry subsequently displayed in the User data entry field **102**.

The Owner Authorization menu **101** has a selection field for

designation of a read access status **104a**, and a selection field for designation

of a write access status **104b**. The default access status for any second party

10   is not-access, but whatever access status that was previously selected for a

second party, it is preferably maintained until the authorized access is

changed. In order to give read access to the second party, the owner selects

the read access selection field **104a**, and in order to not give read access to

the second party, the owner does not select the read access selection field

15   **104a**. Similarly, in order to give write access to the second party, the owner

selects the write access selection field **104b**, and in order to not give write

access to the second party, the owner does not select the write access field

104b. The calendar owner selects both the read access selection field **104a**

and the write access selection field **104b**, in order to give both a read and a

20   write access to the second party, and the calendar owner does not select the

read access field **104a** and the write access field **104b**, in order to not give

both a read and a write access to the second party.

The Owner Authorization menu **101** has selection fields for designation

of the time-periods within the calendar owner's calendar for which the second

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party is being given read access **106a** and write access **106b**. The read

access and write access selection fields **106a** and **106b**, are preferably

implemented as a separate selection field for each day of the week **106a1**,

106b1 for recurrent access throughout the year, and alternatively as a day of

5 a month **106a2**, **106b2** for a specific date in a year; as well as a time-period

106a3, **106b3** implemented from a first designated hour and minute, to a

second designated hour and minute, for read access and write access

respectively.

The Owner Authorization menu **101** also has selection fields for event

10 types **103**, including exemplary event types meeting, appointment, reminder,

and event. The calendar owner can optionally select these event types in an

embodiment of the present invention, to further restrict second party access

to the writing of specific event types, or the reading of specific event types

within the valid access time-periods.

15 Referring now to Figure **2**, a Guest Identification menu **108**

embodiment of the present invention enables the association of the access

granted to a second party user identified in User data entry field **102** with a

particular second party user entry, so that a calendar owner can define the

access status of a party, a group of parties, or a type of user in the exemplary

20 Owner Authorization menu **101**, and give the particular second party that

same defined calendar access. This capability of the present invention allows

the calendar owner to give an access status to a grouping, and then assign to

an individual or other group title the access status of the grouping. This

enables the particular second party to access the calendar owner's calendar

by entry of the particular second party alphanumeric identification, rather than the second party user identification entered in User data entry field 102.

The calendar owner preferably selects Group/Type data entry field 109b and subsequently enters the party, group of parties, or type of user

5   entered in User data entry field 102 of Figure 1 in the Group/Type entry field 109b, and selects User data entry field 109a and subsequently enters the particular party alphanumeric identification in User data entry field 109a, preferably in any order. The particular party acquires the same calendar access status as the party, group of parties, or type of party entered in data

10   entry field 109b. In the preferred embodiment of the present invention, only a calendar owner maycan enter data into this menu. In another embodiment of the present invention, any party maycan enter data into this menu, and if the calendar owner desires to maintain an access control of his or her calendar, he or she will enter a cryptic ID entry in data entry field 102. A specific

15   example of the utility of this aspect of the present invention is a calendar owner assigning an access status to "teachers" in data entry field 102, entering in Type data entry field 109b "teachers", and the name of a particular second party such as the name "Ann" in User data entry field 109a, and accordingly giving the access status of "teachers" to "Ann", who may be a

20   particular teacher.

Referring now to Figure 3, a calendar owner has entered data into the Owner Authorization menu 101 described with reference to Figure 1. In this exemplary Owner Authorization menu data entry, a calendar owner has granted both a read access and a write access to a second party identified in

data entry field 102 as an exemplary Mr. Charney, for Mondays-Fridays, from
9:00 a.m. – 3:00 p.m. each day. This is an example illustrative of the utility
and novelty of the present invention, wherein a calendar owner maycan grant
both, or either, a read and write access to a second party for a specific time-

5   period. In the example portrayed, the entries are consistent with a student
calendar owner granting both a read access and a write access for his or her
calendar to a teacher, during, and only during, the traditional time-slot of the
traditional school day. Other useful second parties are, for instance, social
friends having calendar access on Friday and Saturday nights, study group

10   members having calendar access on weekday nights, and teachers having
calendar access Mondays-Fridays, 9:00 a.m.-3:00 p.m..

In User data entry field 102, the calendar owner has entered a "Mr.
Charney" as the identification of the second party to have access to the user's
calendar. The calendar owner has designated in read access field 104a, a

15   read access, and in write access field 104b, a write access, to Mr. Charney.
In the read access day of the week selection field 106a1, the calendar owner
has selected both-Mondays, Tuesdays, Wednesdays, Thursdays, and
Fridays, thus giving to Mr. Charney a read access to the calendar owner's
calendar for each day Monday-Friday. In the read access time-period

20   selection field 106a3, the calendar owner has given to Mr. Charney, for each
of the read access designated days Mondays-Fridays, a time-slot read access
for from 9:00 a.m. to 3:00 p.m.. In the write access day of the week selection
field 106b1, the calendar owner has selected both-Mondays, Tuesdays,
Wednesdays, Thursdays, and Fridays, thus giving to Mr. Charney a write

access to the calendar owner's calendar for each day Monday-Friday. In the write access time-period selection field **106b3**, the calendar owner has given to Mr. Charney, for each of the write access designated days Mondays-Fridays, a time-slot write access for from 9:00 a.m. to 3:00 p.m..

5   Thus, the calendar owner, by entering data into the exemplary Owner Authorization menu **101**, has given to a user having an identification of "Mr. Charney" both a read access to his/her calendar for each day Monday - Friday, from 9:00 a.m. - 3:00 p.m., and a write access for each day Monday - Friday, from 9:00 a.m. - 3:00 p.m.. This example is useful for the case in

10   which the calendar is owned by a student, and Mr. Charney is a teacher, or vice versa. According to the exemplary calendar access inputs, a student has given one of his/her teachers both a read and a write access to the student's calendar during normal school hours, Mondays - Fridays, 9:00 a.m. - 3:00 p.m.. The teacher Mr. Charney can both write to the owner's calendar for

15   these time-slots, as well as read from the owner's calendar for these time-slots.

Referring now to Figure **4**, a conventional exemplary monthly calendar **115** displays a calendar owner's time-period entries for each day of an exemplary month. The calendar displays for each day, the beginning time for

20   each time-slot entry. It is noted that calendar **115** indicates time entries for each day Thursday June 1, through Saturday June 17, as well as Wednesday June 21, Thursday June 22, and Thursday June 29. With specific exemplary reference to Thursday June 1, the calendar **115** indicates two time-slot entries, the first at 12:00 p.m., and the second at 6:00 p.m., and with specific

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exemplary reference to Friday June 9, the calendar 115 indicates one time-slot entry beginning at 1:00 p.m..

Referring to Figure 5, a conventional exemplary two-day calendar 117 for Thursday June 8, and Friday June 9, corresponds to the entries in the monthly calendar 115 portrayed with reference to Figure 4. The two-day calendar 117 displays that the Friday June 9, time-slot entry portrayed in monthly calendar 115 is for a time beginning at 1:00 p.m. and ending at 4:00 p.m..

Referring to Figure 6, a preferred embodiment second party read access monthly calendar 135 of the present invention that corresponds to the calendar owner's calendar 115 is illustratedseen for a second party having a read access for the calendar owner's calendar 115 only for the time-slots Mondays – Fridays, 9:00 a.m. – 3:00 p.m.. The exemplary read access time-slots are consistent with the entries portrayed on the Owner Authorization menu 101 with reference to Figure 3. In calendar 135, the only data displayed from calendar owner's calendar 115 is the data for time-slots Mondays – Fridays, 9:00 a.m. – 3:00 p.m., corresponding to the exemplary second party's read access times. Thus, with reference to both Figures 3 and 5, the entries for Mondays - Fridays, 3:00 p.m. – 9:00 a.m., and all day Saturdays and Sundays, have been omitted from the calendar owner's calendar 115 for presentation of the calendar for a reader having a restricted read access as in the example herein. Referring to Figure 4, the entries 110a-no fall fully within the time-slots Mondays – Fridays, 9:001 a.m. – 3:00 p.m., and are displayed in the restricted read access calendar 135 portrayed

in Figure **6**. The entries **1**20a-e, for all Saturdays and Sundays, are not within

the time-slots Mondays – Fridays, 9:00 a.m. – 3:00 p.m., and are not

displayed in the restricted read access calendar **1**35 portrayed in Figure **6**.

The entries **1**30a-e, for time entries fully outside the read access period of

5   9:00 a.m. – 3:00 p.m. for Mondays – Fridays, are not displayed in the

restricted read access calendar **1**35 portrayed in Figure **6**.

The time-slot entries that fall only partially within the second party read

access time-slots are preferably portrayed in the second party's calendar with

the time-slots falling within the valid second party read access time-slots

10   displayed (or printed for a printed calendar), but without the descriptive

information otherwise associated with a time-slot entry, and the time-slots

falling outside of~~without~~ the valid second party read access time-slots not

displayed (or printed).

Thus, referring to Figure **4**, time-slot entries **1**40a-c are portrayed on

15   the conventional calendar owner's monthly calendar as beginning at 1:00

p.m. on June 12, with descriptive data printed; as beginning at 8:00 a.m. on

June 13, with descriptive data printed; and beginning at 7:00 a.m. on June 15,

with no descriptive data printed; for entries **1**40a, **1**40b, and **1**40c

respectively.

20   Referring to Figure **7**, the conventional calendar owner's two-day

calendar for June 12, portrays the entry **1**40a beginning at 1:00 p.m. in the

monthly calendar, as spanning the time-period 1:00 p.m. – 5:00 p.m. and

having an exemplary descriptive data "DOCTOR" **1**60a.

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Referring to Figure **8**, the conventional calendar owner's two-day

calendar for June 13, portrays the entry **140b** beginning at 8:00 a.m., as

spanning the time-period 8:00 a.m. – 10 a.m. and having an exemplary

descriptive data "MEETING" **160b**.

5   Referring to Figure **9**, the conventional calendar owner's two-day

calendar for June 15, portrays the entry **140c** beginning at 7:00 a.m., as

spanning the time-period 7:00 a.m. – 10:00 a.m. **160c**.

Again referring to Figure **6**, the second party's preferred embodiment

exemplary monthly calendar for June 12 portrays the entry **140a** as time entry

10   **1550a** beginning at 1:00 p.m. and having no descriptive data printed., Ffor

June 13, portrays the entry **140b** is portrayed as time entry **1550b** beginning

at 9:00 a.m., rather thant 8:00 a.m., and having no descriptive data printed.,

Ffor June 15, portrays the entry **140c** is portrayed as time entry **1550c**

beginning at 9:00 a.m. and having no descriptive data printed.

15   Referring to Figure **10**, the second party's preferred embodiment

exemplary two-day calendar for June 12 portrays the Figure **7** time entry

160a, spanning the time range 1:00 p.m. – 5:00 p.m. and having an

associated exemplary descriptive data "Doctorfdfddfdfd", as a time entry **170a**

spanning the time range 1:00 p.m. – 3:00 p.m., so as to be fully within the

20   bounds of the second party's valid read access times 9:00 a.m. – 3:00 p.m.,

and having no associated descriptive data.

Referring to Figure **11**, the second party's preferred embodiment

exemplary two-day calendar for June 13 portrays the Figure **8** time entry

160b, spanning the time range 8:00 a.m. – 10:00 a.m. and not having an

associated exemplary descriptive data "MEETING", as a time entry 170b

spanning the time range 9:00 a.m. – 10:00 a.m., so as to be fully within the

bounds of the second party's valid read access times, and having no

associated descriptive data.

5   Referring to Figure 12, the second party's preferred embodiment

exemplary two-day calendar for June 15 portrays the Figure 9 time entry

160c, spanning the time range 7:00 a.m. – 10:00 a.m. and having no

associated descriptive data, as a time entry 170c spanning the time range

9:00 a.m. – 10:00 a.m., so as to be fully within the bounds of the second

10   party's valid read access times, and having no associated descriptive data.

Referring to Figure 13, a second party user gains both read and/or

write access to the calendar owner's calendar by preferably entering

appropriate data into a second party Guest Access menu 180. The second

party selects and enters in the Open Calendar data entry field 182 an

15   identifier of the calendar he or she is attempting to access. This identifier

may be an identifier of the calendar owner. In a non-networked embodiment

of the present invention, the non-networked computer may maintain a unitary

calendar, and the User Authorization menu of an embodiment of the present

invention may not have an open calendar data entry field for an identifier of

20   the calendar, because there is only one calendar. The second party also

preferably selects and subsequently enters into the User ID data field 184, his

or her alphanumeric identifier. The alphanumeric identifier is the party, group

of parties, or type of user identifier entered in exemplary data entry field 102

of Figure 1, and alternatively in an embodiment of the present invention the

particular person identifier entered in exemplary data entry field **109ab** in

Figure **102** that corresponds to the access status granted a second party in

data entry field **102**.

It is expected that the second party identifier will generally be a group

5   user type or group affiliation, e.g. "staff member", "teachers(s)", or some other

coded group identifier, and that other members of the group user type or

affiliation will enter that same group identifier in data entry field **184**, to gain

the access status designated by the calendar owner. Thus, in an example,

the calendar owner will grant second party calendar access to "staff member",

10   and in order for a staff member to access the calendar according to his or her

designated status, will enter in ID data entry field **184** "staff member".

However, if the calendar owner has entered a particular party identifier in

exemplary data entry field **109ab**, a second party may also enter that

particular identifier in exemplary ID data entry field **184** to gain access to the

15   calendar. This is useful when the calendar owner wants to grant an access to

particular persons on an individual basis and does not publish the party user

identification entered into the User data entry field **102**.

It is understood that networked embodiments of the present invention

may not have a data field to enter the second party user's identification,

20   because the second party's computer system, the server, or the computer

that maintains the calendar, may already have acquired the second party

user's identification. The calendar support software verifies the second party

user's identification and, if the identification is in the second party records,

sends to the second party computer system the calendar owner's calendar

commensurate with the second party's read access status, and grants write

access to the second party commensurate with the second party's write

access status.

5   Referring to Figure **14**, the exemplary Second Party Write menu **190**

includes the data fields appropriate for a second party event schedule record

creation, edit, and deletion. It is specifically contemplated that this data may

include the ~~prior art~~ event date **192**, beginning and ending time**1 94**, brief

description **196**, event type **198** including an exemplary appointment **198a**,

meeting **198b**, event **198c**, and reminder **198d**, and detailed description

10   ~~1~~**200**. If the second party requesting access to the calendar owner's calendar

does not have a read access and/~~-~~or a write access status, the support

software of the present invention displays to the second party a

corresponding notification.

Referring to Figure **15**, the calendar processing software of the present

15   invention maintains a calendar access status for second parties with respect

to the <u>calendar owner's</u> calendar. Thus, a second party having a read access

and/or a write access status with respect to the calendar has that status, and

the assigned time-periods to which access has been granted, maintained by

the software. The preferred embodiment of the present invention uses [~~T~~he

20   Owner Authorization menu **101**, portrayed with reference to Figure **1**.~~-~~ <u>to</u>

<u>create and/or update the read access and/or write access status for second</u>

<u>parties.</u>

According to the design of the <u>Owner</u>~~User~~ Authorization menu **101**,

the calendar processing software determines the alphanumeric identification

of a second party 1200, as entered in the preferred embodiment by the calendar owner in the user data entry field 102. and The calendar support software determines whether theat identified second party has a read access status in memory for the calendar owner's calendar 1202. If the second party

5 has a read access status record in memory, and the read access status field 104a associated with the second party is not selected 1204, the support software eliminates the read access status for the second party from memory 1208. If the second party has a read access status in memory, and the read access status field 104a associated with the second party is selected, the

10 support software updates the read access status record associated with the second party in memory with the time-slot information from the read access time-period information 106a, 1206. If the second party does not have a read access status in memory, and the read access status field 104a associated with the second party is selected, the support software creates a read access

15 status record in memory for the second party and associates with that record the time-slot information from the read access time-period information 106a. 1210.

The calendar support software determines if the identified second party has a write access status in memory for the calendar owner's calendar 1212.

20 If the second party has a write access status record in memory, and the write access status field 104b associated with the second party is not selected, the support software eliminates the write access status for the second party from memory 1216. If the second party has a write access status in memory, and the write access status field 104b associated with the second party is

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selected, the support software updates the write access status record associated with the second party in memory with the time-slot information from the write access time-period information **106b**, **1218**. If the second party does not have a write access status in memory, and the write access status field **104b** associated with the second party is selected, the support software creates a write access status record in memory for the second party and associates with that record the time-slot information from the write access time-period information **106b**, **1220**.

If the present invention embodiment includes an Owner Authorization menu having data entry fields for a selection of a read and/or write access status and non-access status, the support software determines the access status directly from the data entry fields, and creates and maintains the second party access status according to the status of these fields.

In the preferred embodiment of the present invention, the calendar support software only creates a second party calendar having data for the read access time-slot information associated with the second party when a second party makes a read request of the calendar support software. When a second party makes a read request to the calendar owner's calendar, the support software first determines whether the second party has a read access status, and if so sends the calendar data for the read access data time-slots requested by the second party that match the second party's read access times stored in the second party's read access record. It is specifically contemplated that the present invention includes both the creation and maintenance of a calendar for each second party having read access at all times, and/or the sending of calendar information to a second party for the

times in which the second party has read access to the calendar owner's

calendar whenever updates are made to the valid second party read access

times. In the preferred embodiment of the present invention, the calendar

support software writes data into the calendar owner's calendar from a

5   second party for, and only for, the time-slots that correspond to the second

party's valid write access time-periods.

Referring to Figure **16**, the preferred embodiment calendar processing

software of the present invention includes instructions that designate to a

calendar user a specific access ability based on a characteristic of the

10 calendar user 1244. The calendar user preferably enters into the computer

by a menu his/her alphanumeric identification, preferably using the Guest

menu described with reference to Figure **13**. The calendar processing

software processes the request to access the calendar based on the access

ability that was designated to that user 1246.

15 According to a preferred embodiment of the present invention, the

designating 1244 is based on associating with each user characteristic an

access ability to the calendar that includes an ability to read data from specific

time-periods, and/or write data into specific time periods, where the

designated access ability includes the access ability that is associated with a

20 conforming user characteristic. This user characteristic conforms in the

recommended usage of this invention to the name of a user given calendar

access, or a group affiliation or user type of that user, described as an

alphanumeric selection of a party, group of parties, or type of user with

reference to Figure **1**. According to the preferred embodiment of the present

invention, the preferred mode for entering this information is the Owner

Authorization menu **101** described with reference to Figure **1**. Each user

writes calendar data into the calendar from the user for the time-periods that

the user has a write access ability **1246**, and reads calendar data to the user

5   for the time-periods that the user has a read access ability **1248**.

The processing **1246** includes, if the designated specific access ability

includes an ability to write into the calendar for specific write-data time-

periods, writing user data inputs into the calendar for the write-data time –

periods, and, if the designated specific access ability includes an ability to

10   read data from the calendar for specific read-data time-periods, outputting to

the user a request to read data from the calendar for the read-data time-

periods.

Referring to Figure **17**, the present invention includes a method of

reading data from at least one time-slot, and writing data into at least one

15   time-slot of a computer system maintained calendar. The method includes

the computer system designating **1250** to a non-calendar owner user

particularized by his/her identification, a calendar access privilege, including a

read access privilege and/or a write access privilege. The read access

privilege includes an ability to read data from a first set of time-slot entries.

20   The write access privilege includes an ability to write data to a second set of

time-slots, wherein the first set time-slot entries and the second set time-slot

entries are independent and may or may not fully or partially coincide. The

method also includes the computer system reading an identification that is the

identification of the user or one that has an access privilege of the user **1252**,

and the user accessing calendar data from the computer system in accordance with the privilege 1254. The method includes reading data from the calendar and/or writing data to the calendar, based on the access privilege. The reading data includes reading data from only the first set of

5   time-slot entries, and the writing data includes writing data to only the second set of time-slot entries.

Referring to Figure 18, the present invention includes a method of receiving a request for a first party's calendar by a second party for a time-period, the second party having at least a selected group affiliation or a

10   selected user type 1274. The method includes selectively providing calendar entries for the first party's calendar for the time-period in accordance with the second party's selected group affiliation 1276 or user type 1278, in response to the received request.

Referring to Figure 19, the present invention includes a computer

15   implemented calendaring method that includes receiving input for a first party's calendar for a time-period by a second party that has a selected group affiliation/user type 1282, and processing the received request in accordance with the second party's group affiliation/user type 1284.

Referring to Figure 20, computer system 2300 comprises bus 2301, or

20   other communication device for communicating information, and processor(s) 2302 coupled with bus 2301 for processing information. Computing system 2300 further comprises main memory 2304, a computer readable media that is commonly random access memory (RAM) or other dynamic storage device, coupled to bus 2301 for storing information and instructions for execution by

processor **2302**. Main memory **2304** ~~can also be~~ is used to stor~~eing~~ temporary variables or other intermediate information during execution of instructions by processor **2302**. Computer system **2300** also comprises a read only memory (ROM) media and/or other static storage device **2306**

5   coupled to bus **2301** for storing static information and instructions for processor(s) **2302**. Data storage device **2306**, another computer readable media, is coupled to bus **2301** for storing information and instructions, and can be such exemplary computer readable media as magnetic disk, and/or an optical disk and corresponding drives. Display **2308** is coupled to bus **2301**

10   for displaying data generated by the processors **2302**, and mouse **2310**, or other exemplary selecting or pointing device, and keyboard **2312**, each coupled to bus **2301**, are used to input data into the processor **2302**.

     While certain exemplary embodiments have been described and shown in the accompanying drawings, it is to be understood that these

15   embodiments are merely illustrative of and not restrictive of the broad invention. For example, the present invention is presented with reference to a plurality of displays and data input menus. These displays and data input menus are exemplary and illustrative of an embodiment of the present invention, and how the present invention can be used. It is understood that

20   the displays and menus required by the present invention and presented herein for exemplary purposes are adaptable to conform to the data display and entry characteristics of other calendaring systems. The present invention is not limited to the specific constructions and arrangements shown and described, and alternative embodiments will become apparent to those skilled

in the art to which the present invention pertains without departing from the

scope of the present invention. The scope of the present invention is defined

by the appended claims rather than the foregoing description.

I claim:

1.   1.   A computer implemented calendaring method comprising:

2.   receiving inputs for a first party's calendar for a time-period, with the

3.   inputs being submitted by a second party having ~~at least a selected~~ an

4.   identification identifiable to be characterized by at least one of a group

5.   affiliation and a user type;

6.   processing said received input in accordance with the second party's at

7.   least one of group affiliation/ and user type characterizable identification.

1.   2.   The method defined in claim 1 including defining before said receiving

2.   at least one identification and an associated access privilege to said calendar,

3.   with each of said at least one pre-defined identification being characterizable

4.   by at least one of group affiliation an user type; and wherein said selected

5.   identification of said second party corresponds to one of said at least one pre-

6.   defined identifications, and said processing includes granting said second

7.   party an access ability to said calendar associated with said selected

8.   identification of said second party.

1.   3.   The method defined in claim 1 including receiving inputs by said first

2.   party of at least one identification and an associated calendar access

3.   privilege, with each of said at least one identification being characterizable by

4.   at least one of group affiliation and user type, and each of said at least one

5.   associated calendar access privileges ~~each~~ including at least one of an

6.   ~~second party~~ ability to ~~access~~ read data of said calendar ~~data~~ for only

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7 specified calendar time-slots, and to write data into said calendar for only

8 specified time-slots; and wherein said received identification offrom said

9 second party corresponds to one of said at least onereceived identifications

10 inputted byfrom said first party, and said processing includes granting said

11 second party the associated calendar access privilegeability associated with

12 said corresponding received identification.

1 4.   A computer implemented calendaring method comprising:

2   receiving a request for a first party's calendar for a time-period,

3 wherein the request is being submitted by a second party having an selected

4 identifier identifiable to be characterized by at leastincluding one of a group

5 affiliation identifier and a user type identifier;

6   selectively providing calendar entries for the first party's calendar for

7 the time-period in accordance with the second party's at least one of group

8 affiliation and user type characterized identifier in response to said request.

1 5.   The method defined in claim 4 further including defining at least one

2 identifier before said receiving, with each of said at least one pre-defined

3 identifier being characterizable by at least one of group affiliation and user

4 type, wherein said selected identifier of said second party is one of said at

5 least one pre-defined input identifiers.

1 6.   The method defined in claim 4 further including before said request by

2 said second party, receiving input from said first party that defines at least

3 one identifier, with each of said at least one pre-defined identifier being

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4   characterizable by at least one of group affiliation and user type; and wherein

5   said selected identifier of said second party is one of said at least one

6   identifiers received from said first party.

1   7.   The method defined in claim 4 further including defining at least one

2   identifier before said receiving, including defining at least one time-period

3   associated with each said pre-defined identifier, with each time-period being a

4   time-period where a party having the corresponding pre-defined identifier is

5   authorized for one of writing an entry for said calendar entry and for viewing

6   an entry in said calendar.

1   8.   A method of reading data from at least one time-slot and writing data

2   into at least one time-slot of a first user's computer system maintained

3   calendar comprising:

4   designating by said computer system to a second user identification an

5   a time slot based calendar access privilege to said calendar, wherein the time

6   slot based calendar access privilege includesing at least one of a time slot

7   based calendar read access privilege and a time slot based calendar write

8   access privilege, each saidwith the time slot based calendar read access

9   privilege specifyingincluding an ability to read data only from at least one

10   specified a first subset of time-slots, and each saidsaid the time slot based

11   calendar write access privilege including an ability to write data only into at

12   least one specified a second subset of time-slots. and wherein at least one of

13   said first and second subsets having less than all available time slots;

14   reading by said computer system of a user's user identification that

15   includes at least one of identifying the user to be said second user

16   identification and an identification defined to have said access privilege

17   designated to said second user; and

18   granting permission by the computer system to said second user to

19   accessing data of said first user's calendar by said user in accordance with

20   said time slot based calendar access privilege designated for said second

21   user.

1   9.   The method defined in claim 8 wherein said second user has a user

2   identification includes an identification of one of a group type and identifiable

3   to one of a group affiliation and a user type.

1   10.   The method defined in claim 8 including reading into said computer

2   system said second user's user identification and said time slot based

3   calendar access privilege, as an input to said designating.

1   11.   The method defined in claim 8 wherein said designating includes

2   accessing from further including the computer system facilitating said first

3   user in providing said second user's user identification and said time slot

4   based calendar access privileges.

1   12.   The method defined in claim 8 wherein said accessing includes further

2   including the computer system facilitating the user in inputting data into

3   selected ones of said second subset of time slots in accordance with said

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4 time slot based write access privilege, and reading data from selected ones of

5 said first subset of time-slots in accordance with said time slot based read

6 access privilege.

1 13. The method defined in claim 8 wherein said calendar includes at least

2 one an event that spans a plurality of third subset of time-slots, where only

3 some of said third subset of time-slots overlaps with saidbeing first subset of

4 time-slots, and said events having both time-slot data and descriptive data;

5 wherein said computer system omits said descriptive data when said event is

6 accessed by said second user accessing for each said event omits said

7 descriptive data.

1 14. The method defined in claim 8 wherein said further including writing

2 data to selected ones of said second subset of time-slots, entries includinges

3 at least one of editing said data in for one or more of said second subset of

4 time-slots entries, creating an event record infor one or more of said second

5 subset of time-slots entries, inserting data into one or more of said second

6 subset of time-slots entries, deleting data in one or more of said second

7 subset of time-slots entries, and deleting an event record in one or more of

8 said second subset of time-slots entries.

1 15. The method defined in claim 8 wherein each of said first and second

2 subsets of time-slots includes at least one of a time-period on at least one

3 specific date, and a time-period on each day of each week.

1   16.   The method defined in claim 8 ~~wherein said~~ further including writing

2   data ~~further~~ to selected ones of said second subset of time-slots, includ~~es~~ing

3   at least one of categorizing a meeting, categorizing an appointment,

4   categorizing a reminder, categorizing an event, categorizing an anniversary,

5   categorizing a family event, categorizing a school meeting, and categorizing a

6   social event.

1

1   17.   The method defined in claim 8 wherein said time slot based calendar

2   access privilege further includes an event type time slot based calendar

3   access privilege including at least one of an event type and time slot based

4   calendar read access privilege that includes an ability to read data only from

5   said first subset of time slots for a specified event type, and an event type and

6   time slot based calendar write access privilege that includes an ability to write

7   data only into said second subset of time slots for a specified event type.

1   18.   An article of manufacture including one or more computer-readable

2   media having stored thereon a plurality of programming instructions for

3   implementing a computer-hosted calendar to be executed by at least one

4   processor, that when executed perform the following operations:

5   designate to a user of said calendar a specific access ability based on

6   a characteristic of said user;

7   process a request to access said calendar based on said characteristic

8   based designated access ability.

1   19.   The article of manufacture defined in claim 18, wherein said specific

2   access ability includes an ability to_perform at least one of read data from only

3   specific read-data time-periods of said calendar, and write data into only

4   specific write-data time-periods of said calendar; and wherein said process

5   includes at least one of retrievesend data forto said user in conformance with

6   said read-data time-period_specification, and update said calendar in

7   conformance with said write-data time-period_specification.

1   20.   The article of manufacture defined in claim 18 wherein said operations

2   further include before said designate,

3   associate with each of at least one user characteristics an access

4   ability to said calendar, said with each associateduser access ability including

5   an ability to at least perform one of only read data from specific read-data

6   time-periods of said calendar, and only write data into specific write-data time-

7   periods of said calendar; and wherein said designated specific access ability

8   includes thesaid associated access ability to said calendar if corresponding to

9   said characteristic of said user-conforms with one of said user-characteristics.

1   21.   The article of manufacture defined in claim 18 wherein said operations

2   include read from an administrative user of said calendar said characteristic

3   and the specific access ability to be designated before said designating.

1   22.   The article of manufacturing defined in claim 18 wherein said

2   operations include read from an owner of said calendar an identification of

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3 said characteristic ~~of said user~~ and said specific access ability to be

4 designated~~, for each of at least one characteristic~~.

1 23. The article of manufacturing defined in claim 18 wherein said

2 characteristic includes one of an individual identifier, a group affiliation, and a

3 user type.

1 24. The article of manufacturing defined in claim 18 wherein said specific

2 access ability includes an ability to read data from specific read-data time-

3 periods of said calendar, and wherein if said calendar includes at least one

4 event that spans a plurality of time-periods, with only some of which are read-

5 data time periods, and ~~wherein~~ each of said at least one event includes both

6 time-period data and descriptive data, then said process includes ~~an ability to~~

7 read~~ing~~ data from said specific read-data time periods and omitting said

8 descriptive data.

1 25. The article of manufacturing defined in claim 18 wherein said

2 operations include read from an owner of said calendar, before said

3 designate, a first characteristic and an associated first specific access ability,

4 and at least one second characteristic that is assigned the ~~specific said first~~

5 ~~characteristic~~ access ability associated with said first characteristic ~~before~~

6 ~~said designating,~~ and wherein ~~if~~when said user characteristic is equivalent to

7 one of said at least one second characteristics, said ~~designating~~ user is

8 designated said first access ability as its specific access ability.

1   26.   The article of manufacturing defined in claim 18 wherein said process

2   includes, if said designated specific access ability includes an ability to write

3   into said calendar for specific write-data time-periods, process a request to

4   write data into said calendar for said write-data time –periods, and if said

5   designated specific access ability includes an ability to read data from said

6   calendar for specific read-data time-periods, process a request to read data

7   from said calendar for said read-data time-periods.

1   27.   The article of manufacturing defined in claim 18 wherein said specific

2   access ability includes an ability to perform at least one of read data from only

3   specific event type time-periods of said calendar, and write data into only

4   specific event type read-data time periods of said calendar; and wherein said

5   process includes at least one of send retrieve data for said user in

6   conformance with said read-data time–period specification, and update said

7   calendar in conformance with said write-data time period specification..

1   28.   The article of manufacturing defined in claim 18 wherein said process

2   further includes an ability to said user updating said calendar by a user with

3   specified event type data.

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ABSTRACT OF THE DISCLOSURE

A method of calendaring events in a computing system, and an article containing instructions for operating a calendar in a computing system are disclosed. A calendar owner defines a plurality of user types and user identifications for his or her calendar. Each user type or identification has a separate associated read and/or write access to the calendar owner's calendar defined by the specific calendar time-slots accessible in the calendar owner's calendar. These read and/or write time-slots are determined by the calendar owner so that different second party users can each have separately defined read and/or write access capability to the calendar owner's calendar determined by the calendar owner.

A second user either explicitly or by virtue of its group affiliation or user type is given access to read and/or write accesses to selected time slots of a first user's calendar.